OPERATING INSTRUCTIONS

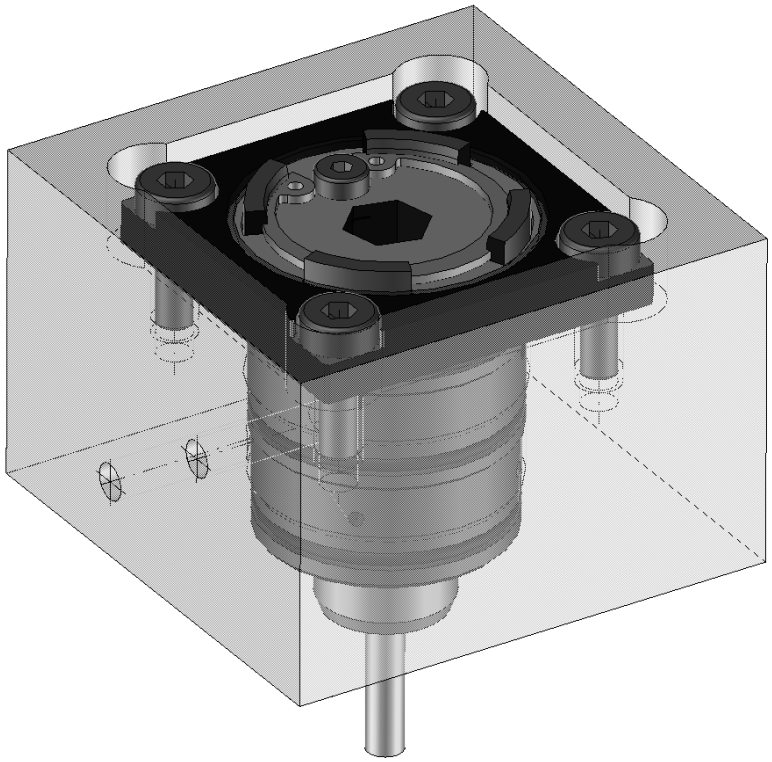
OPERATING UNIT - Pneumatic

CP 60 X 46

Article no.: 299898
Drawing no.: 62.000.013.02

For:

2016	MICRO	NZ	Pin Ø 2
2025 / 27	ALLROUND	DNZ / DNZL / NZ	Pin Ø 3
2032 / 36	ALLROUND	DNZ / DNZL / NZ	Pin Ø 5



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Technical changes reserved

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1. General safety instructions

1.1 Safety at work

The tool must be grounded! If the nozzle is operated outside the tool, then the nozzle must be grounded.

Turn on cooling of the unit before start up heating.

An uncontrolled escape of polymer melt is possible if the hot runner system is heated up. This could happen if the injection mold is installed as well as if it's dismantled.

Attention!

Danger of crushing! Don`t reach under the Piston rod.

It's absolutely necessary to wear protective clothing.

- closed protective clothing
- protective gloves
- safety helmet
- protective hood or goggles
- safety boot

1.2 Skilled Experts

Only experts and/or trained persons are authorized to handle hot runner systems.

2. Important note

2.1 Valve pin operating

The valve pins can only be operated in heated up condition and with cooling connected to the operating unit.
Non-observance leads to pin damage. Non-observance leads to pin damage.

2.2 Medium

2.2.1 Pneumatic medium

Use maintenance unit with particle filter, lubricator and water separator. (min. 6 / max. 10bar)

2.2.2 Cooling medium water

1. Water quality must be according to VDI guideline 3808.
2. Recommended PH-value 7.0-8.5.
3. Cooling water temperature min 20° C up to max. 60° C (difference inlet/outlet max. 5° C)
4. Pressure max. 8 bar
5. Minimum flow rate 2 l /min. per unit.
6. Maximum 3 operating units connected in a row

Cooling and after cooling time

Heated up hot runner shut off systems should only be operated with the chiller connected and running. In case of non-observance a thermal overloading of the sealing assembly leads to a leakage or a malfunction of the operating unit.

After turning off heat, you can disconnect the chiller.

It is no after cooling tim necessary.

3. Views + parts list / technical data

3.1 Parts view

Component parts sectional view

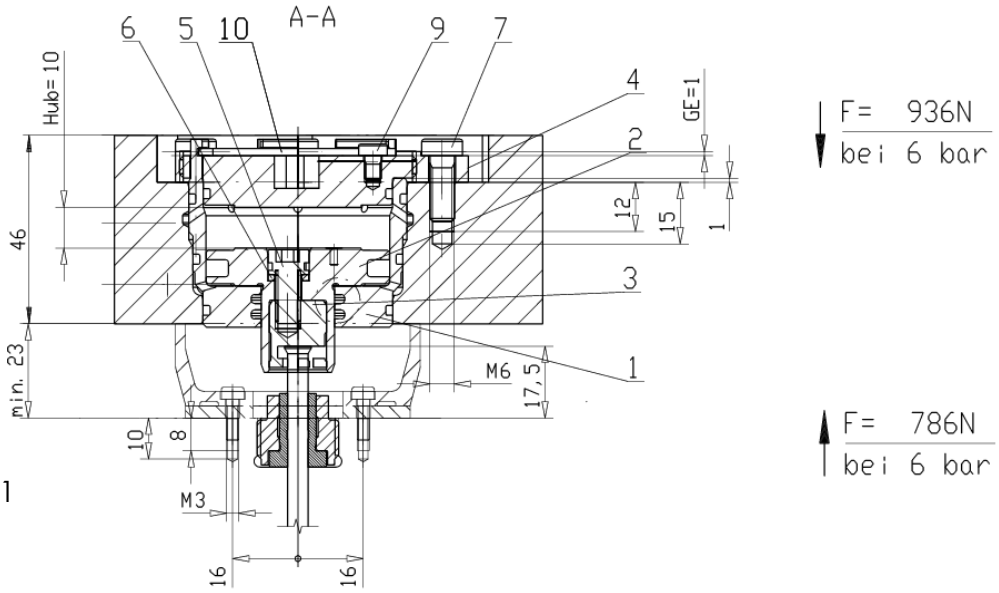


Figure 1

Component parts top view

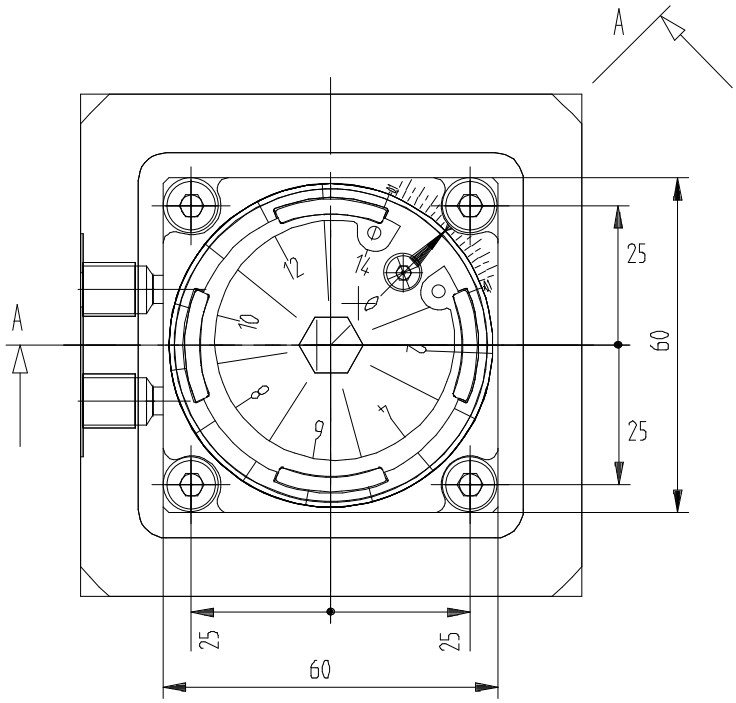


Figure 2

3.2 Stückliste

Pos. Nr.	Benennung	Stück
1	Case	1
2	Piston	1
3	Valve pin holder	1
4	Holder(4a) and adjustment lid (4b)	1
5	Locking screw (special part)	1
6	Locking ring	1
7	Allen head screw M6X15 DIN6912	4
8	Seal assembly	1
9	Allen head screw M4X6 DIN7984	1
10	Locking ring	1

3.3 Technical data

Cylinder	
outside dimensions	60 x 60 x 46 (Height = tool-dimension)
pneumatic pressure	min. 6 bar max. 10 bar
pneumatic pipe	min. Ø 5mm
Pin close	936 N bei 6 Bar (Piston Ø 45mm)
Pin open	786 N Bei 6 Bar (Ø 45 – Ø 18 rod)
Stroke	10 mm
air flow rate	32 ccm/sek. (0,5 Sek switching time)
swept volume with pin closed	16 ccm

Pin	
Ø 2 mm	MICRO 2016 NZ
Ø 3 mm	Allround 2025 / 27 DNZ / DNZL / NZ
Ø 5 mm	Allround 2032 / 36 DNZ / DNZL / NZ
Pin adjustment	+ / - 1mm
Pin - uncoupling	possible

Anzugsdrehmomente		
Pos. 5	Locking screw M6 (special screw)	10 Nm
Pos. 7	Allen head screw M6X15 10.9 DIN6912	12 Nm
Pos. 9	Allen head screw M4X6 10.9 DIN7984	4 Nm

4.0 Pin adjustment by vernier

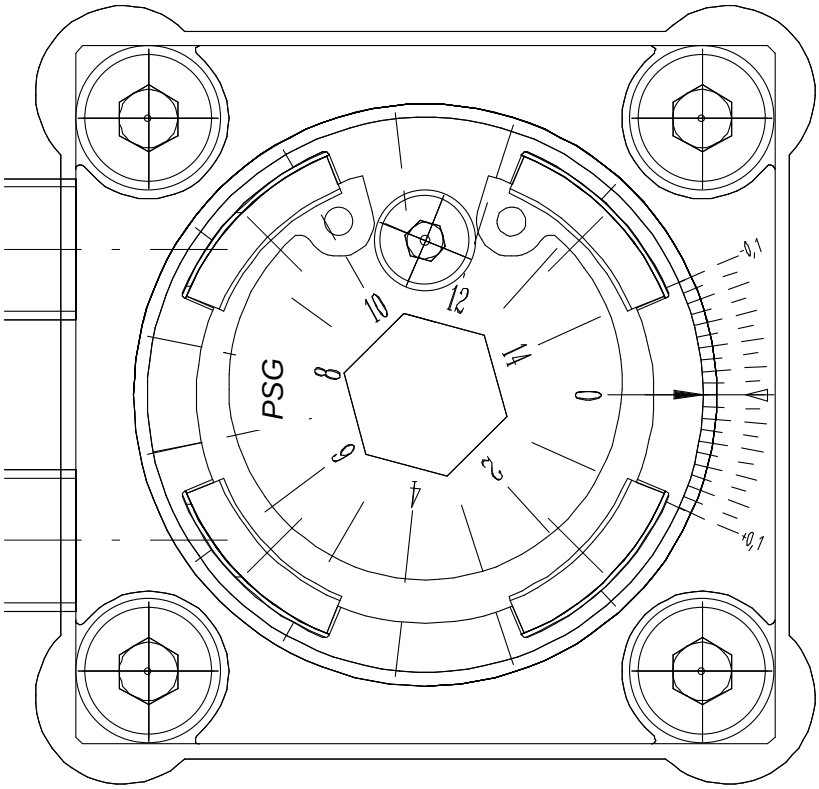


Figure 3

The figure shows the basic setting on delivery.

Each scale division from 0 to 15 is equivalent to 0.1 mm pin adjustment.

With the vernier an adjustment of about 0.01 mm possible.

Clockwise rotation = pin forward
Counterclockwise rotation = pin backward

4.1 Basic setting of the pin (general)

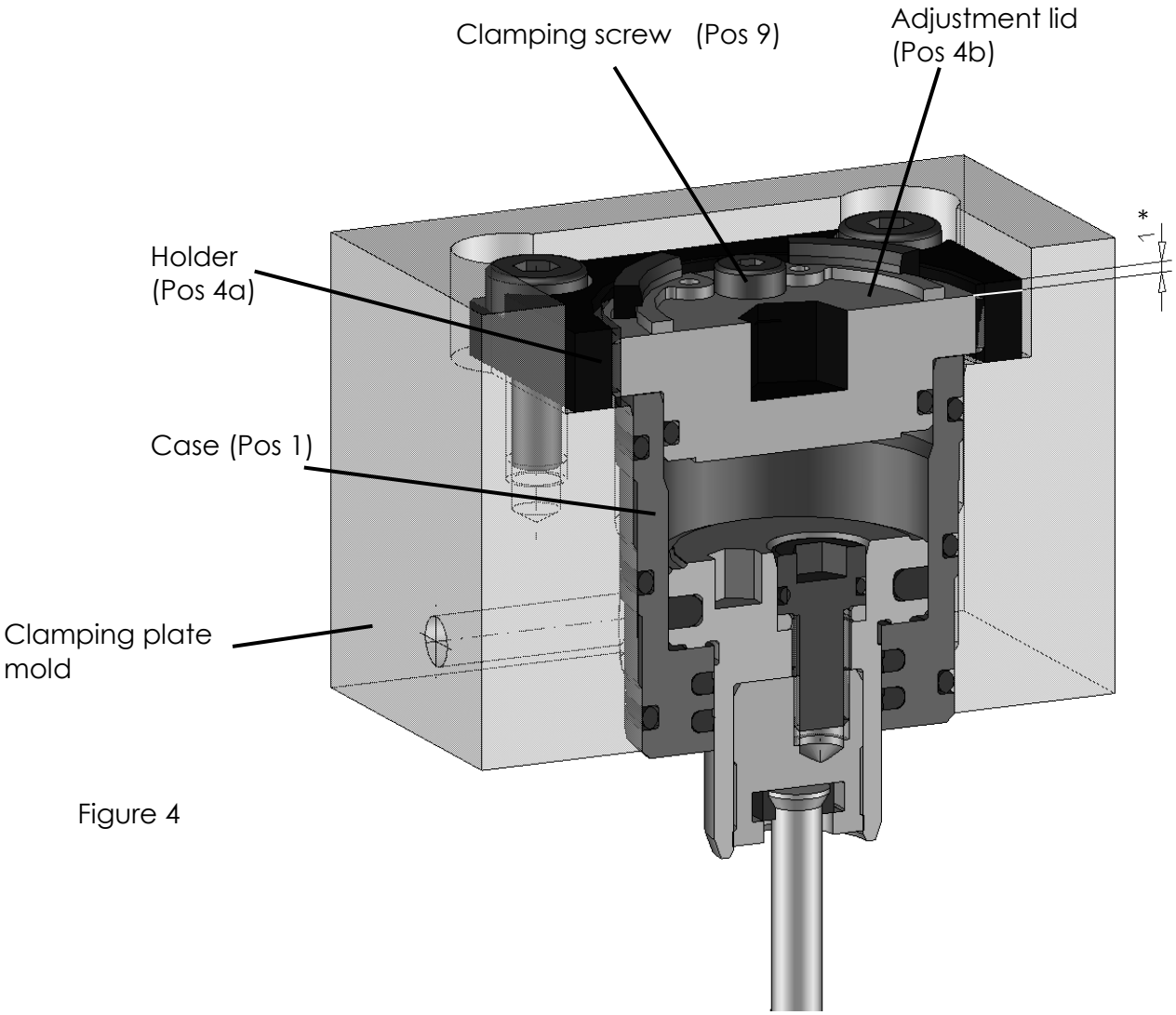


Figure 4

- By the basic setting of the pin
  the adjustment lid is located 1 mm deep in the holder.
  (adjustment ± 1mm)

- Caution ! Assemble the operating unit only in **basic setting**, otherwise there is a risk for collision in the ante-chamber.

4.1.1 Basic setting pin

The basic setting is already made by the factory.

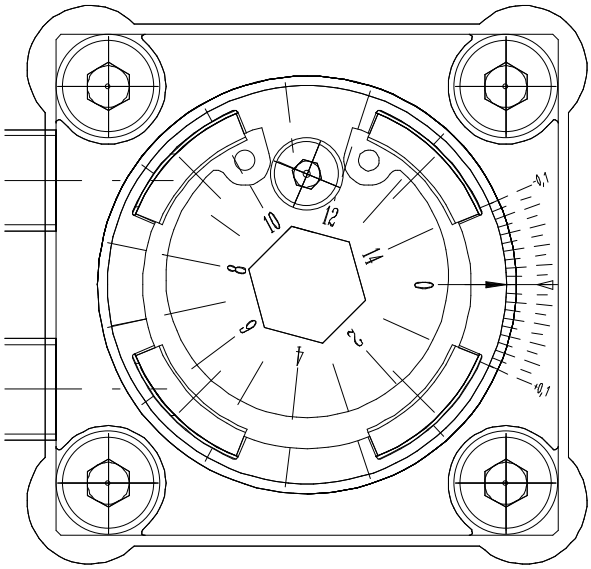


Figure 5

4.1.2

For DNZ and DNZL the pin is already adjusted.

4.1.3

- Caution ! The basic setting for gate NZ is already made by the factory. Dimensional deviation could result in a collision between ante-chamber and pin.

- Therefore operate the first pin "close" with low pressure and measure the pin position in the tool section.

- Adjust the pin position like this, that the phase X sticks out of the cavity.

	Ø	Min. X
2016 MICRO	2	0,05mm
2025 / 27 ALLROUND	3	0,1mm
2032 / 37 ALLROUND	5	0,3mm

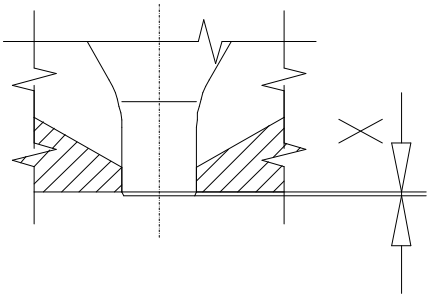


Figure 6

Please consider longer dimensions of the pin in heated up condition. In the cold condition, the needle must be short by the amount of linear expansion △L

4.1.4 Basic setting

Step 1
Change system over to pressure less!

If there is plastic inside, then the system must be heated up.

Step 2
Remove the 4 clamping screw (pos 13).

Step 3
Turn adjustment lid (pos 3) to the same height („tight fit“) as the holder (pos 2).

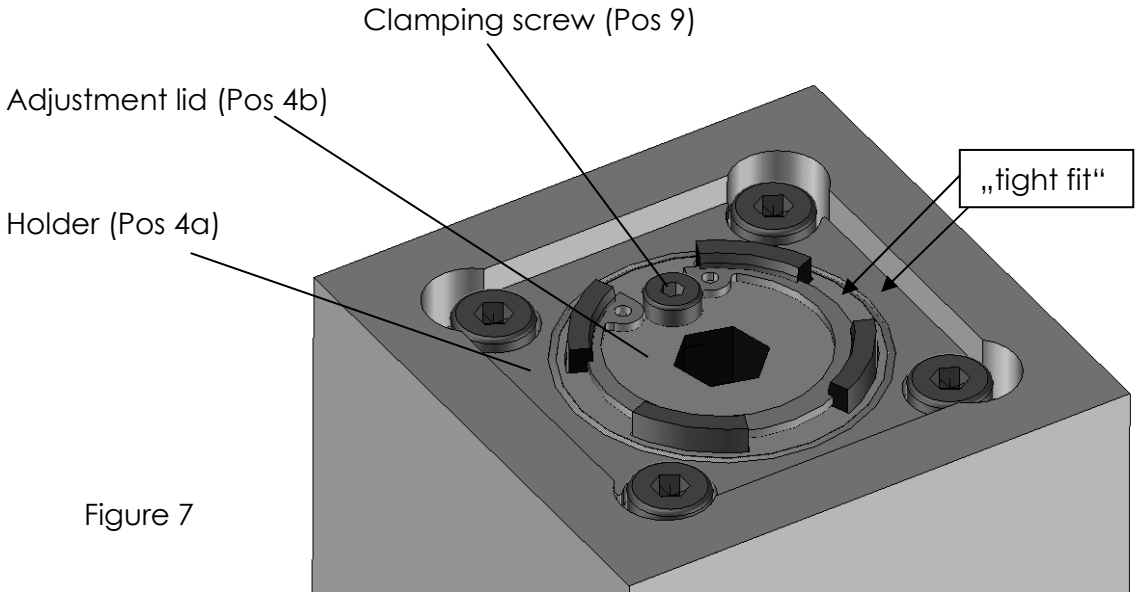


Figure 7

The scale is on the line 10.

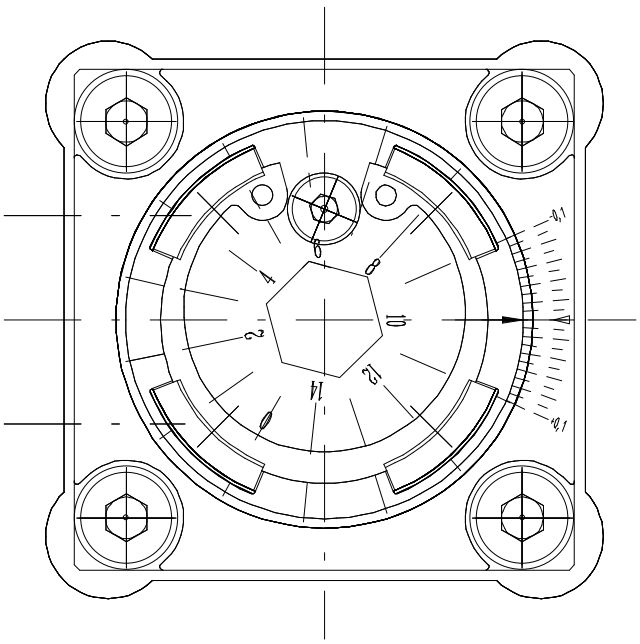


Figure 8

Step 4
Turn adjustment lid in clockwise direction to line 0.

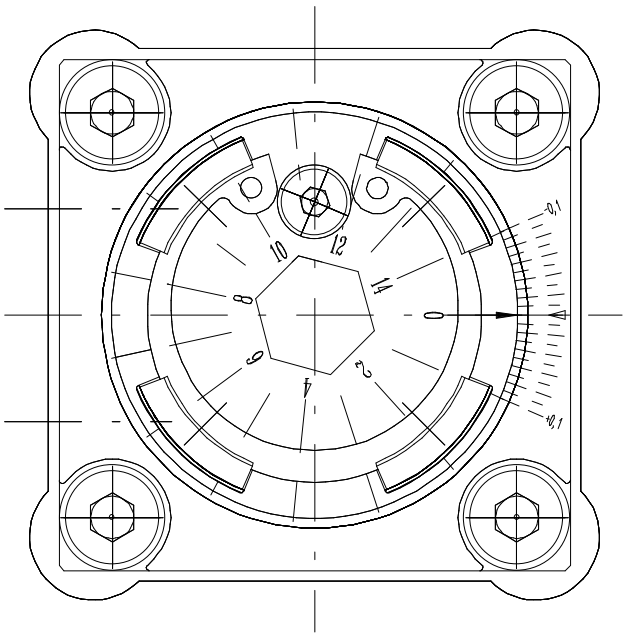


Figure 9

Step 5
Tighten the clamping screw (pos 9) with torque.

Tightening torques		
Pos. 9	Allen head screw DIN7984 M4X6 10.8	4 Nm

Now the operating unit is in basic setting.

4.2. Final setting (pin adjustment)

For gate type NZ a final setting (pin adjustment) is necessary, because of molding tolerances.

See point **4.1.3**

4.2.1

Systems filled with plastic must be heated up.

4.2.2. Final setting (pin adjustment)

Please note point 4.1.2 – 4.1.4

Step 1

Change over system to pressure less!

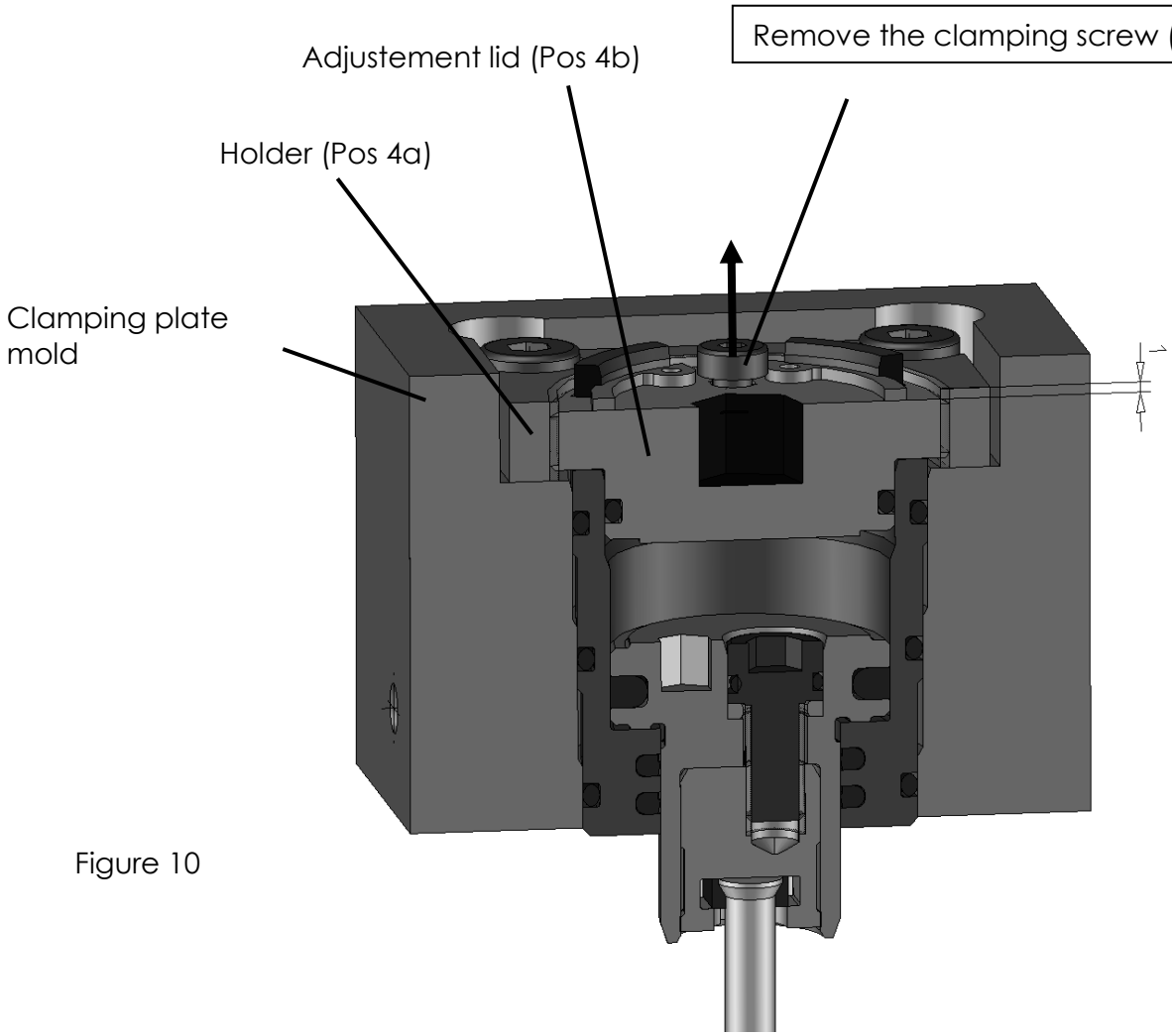


Figure 10

- For pin adjustment turn off pneumatic pressure.
- Systems filled with plastic must be heated up.
- Unscrew the clamping screw (pos. 9) M4x6 about 1mm.

Attention!

Danger of crushing! Don`t reach under the Piston rod.

4.2.2. Final setting (pin adjustment) gradually

Step 2

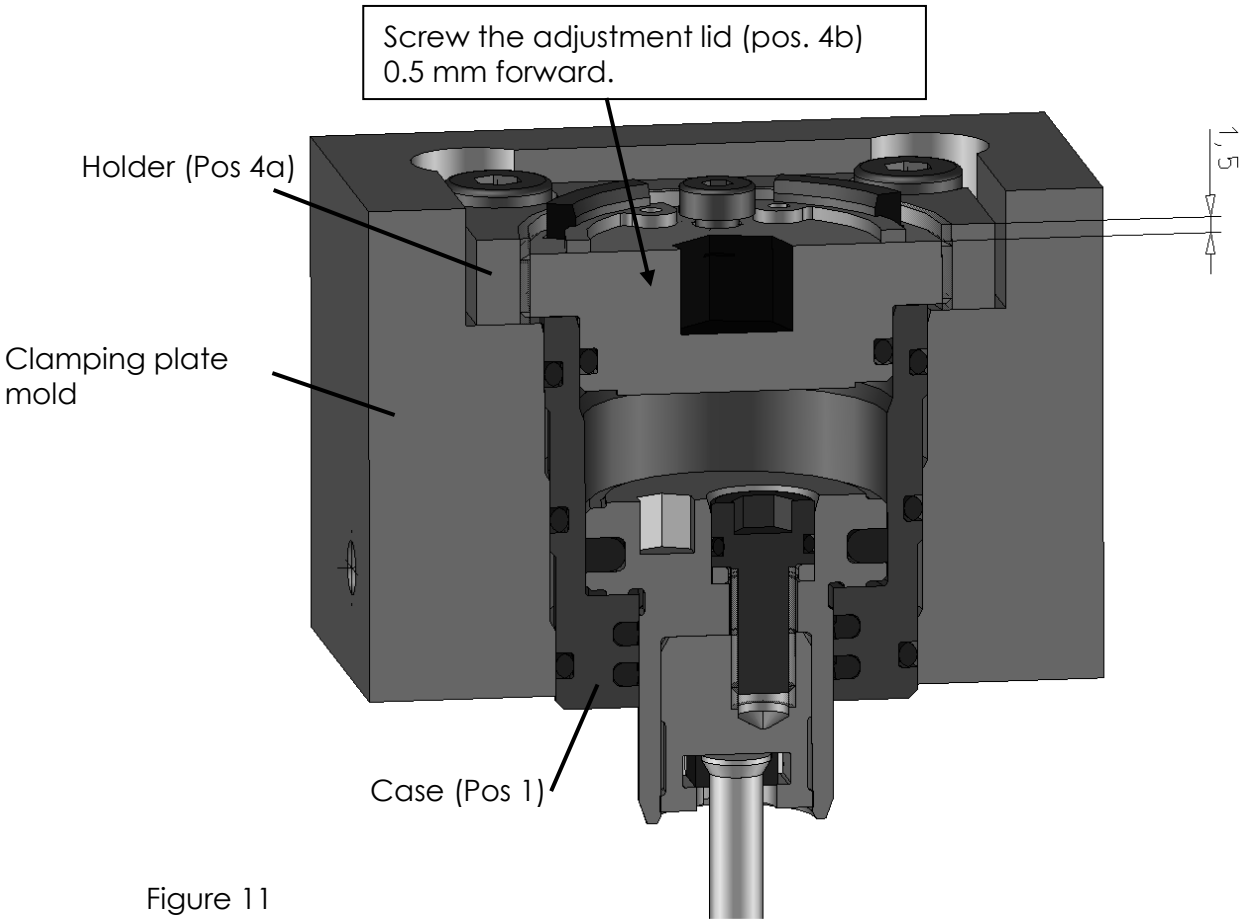


Figure 11

- Turn the lid (pos .4b) in clockwise direction to move the pin forward, turn the lid in counterclockwise direction to move the pin back, according to vernier.
- The adjustment lid (pos. 4b) was screwed forward about 0.5 mm.
- The case (pos. 1) in the clamping plate moved forward about 0.5 mm by the fixed holder (pos. 4a).
- The distances change up to 1.5 mm.
- The piston stroke remains on 10 mm.

4.2.2. Final setting (pin adjustment) gradually

Step 3

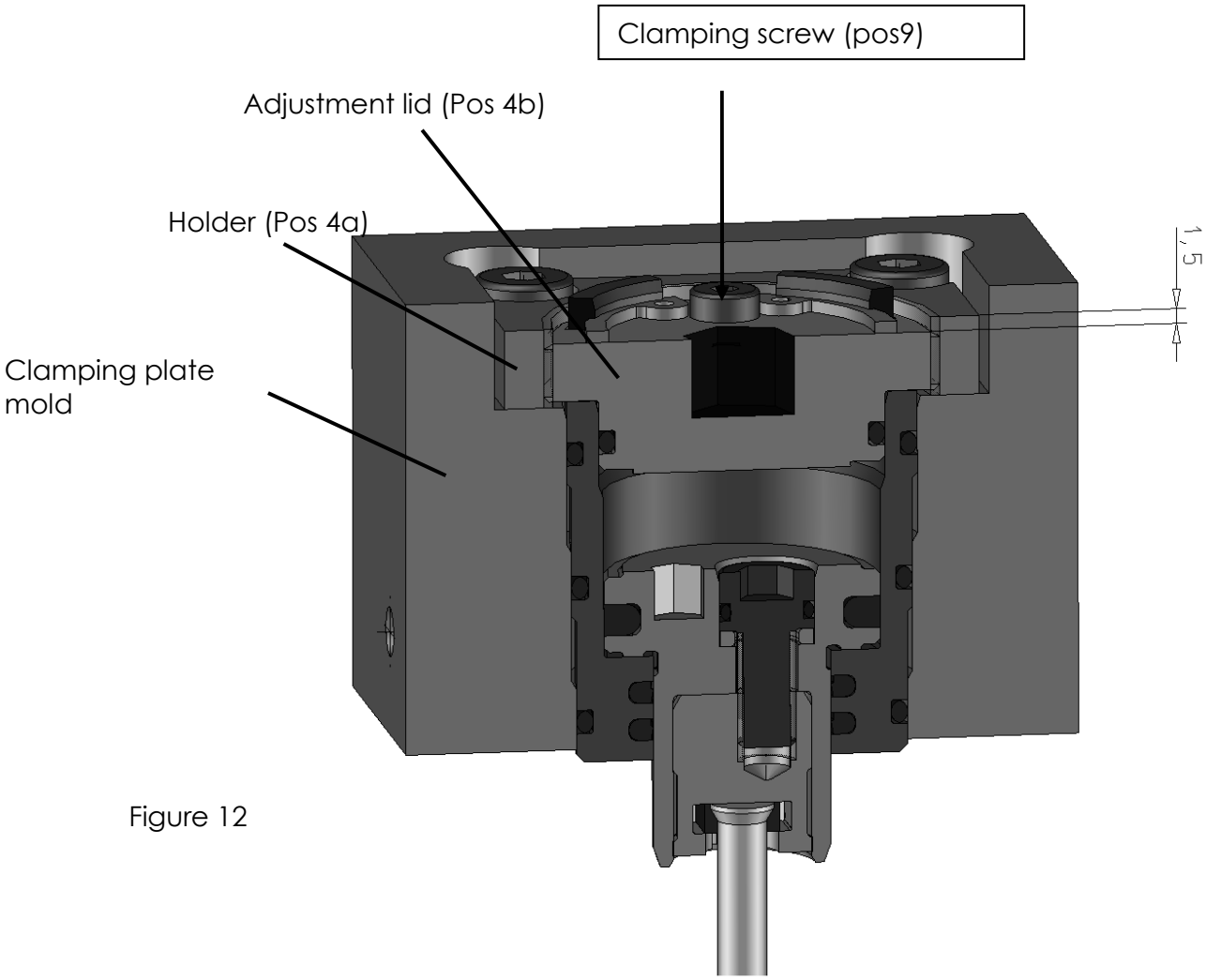


Figure 12

- Then retighten the screw M4x6 (Pos. 9)

Tightening torques		
Pos. 9	Allen head screw DIN7984 M4X6 10.9	4 Nm

- The position is adjusted and locked.
- Connect pneumatic pressure

4.3. Uncoupling of the pin

Step 1

Change over system to pressure less!

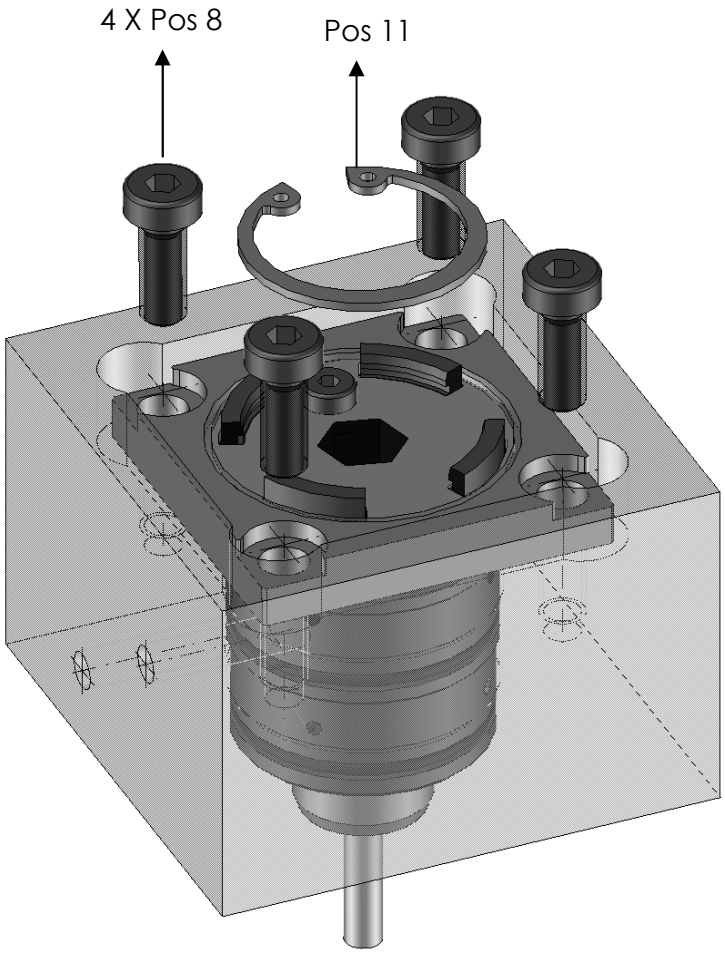


Figure 13

- To uncouple the pin remove:

  1 Locking ring (Seegering) (Pos 10)

  4 pcs. M6 X 15 (Pos 7)

4.3 Uncoupling of the pin

Step 2

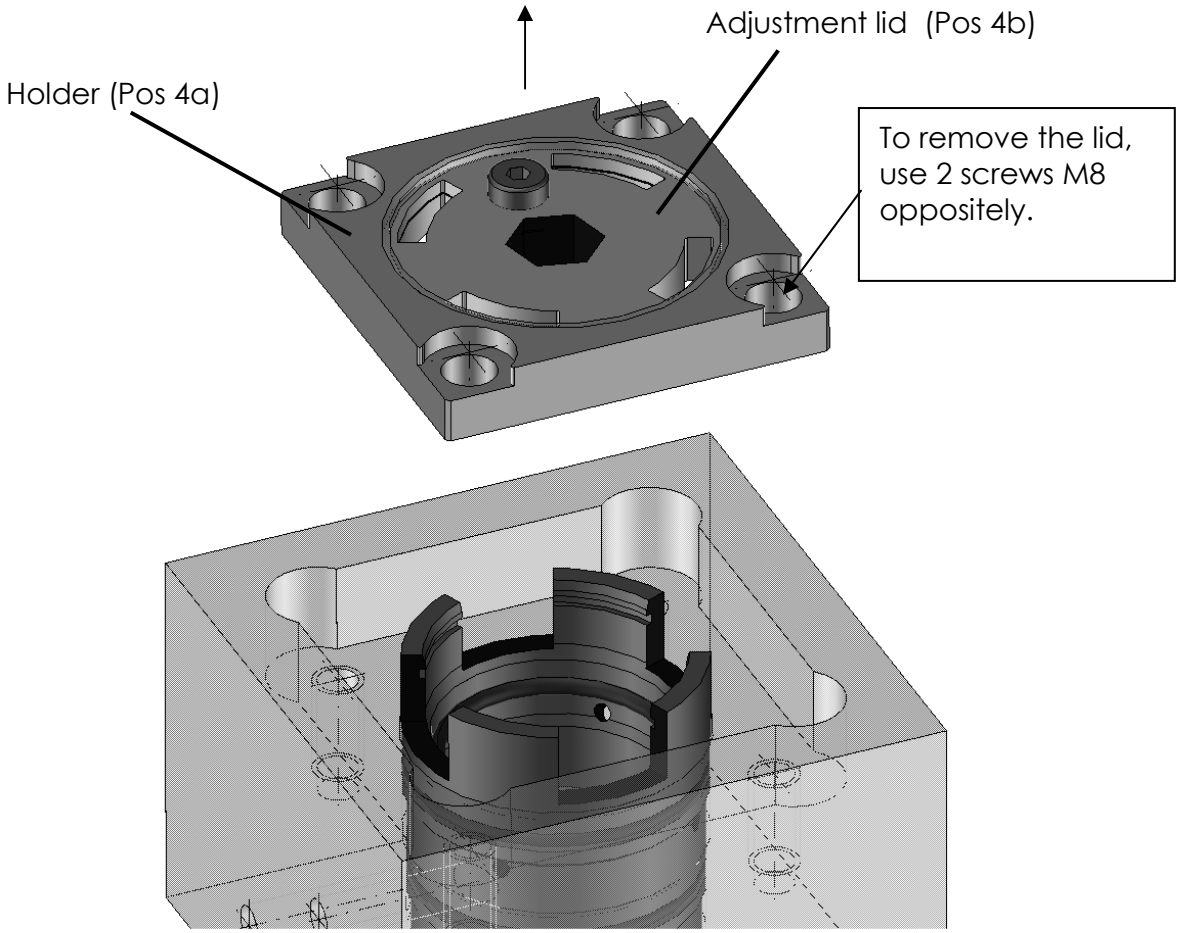


Figure 14

- Draw the holder upwards together with the adjustment lid.

4.3 Uncoupling of the pin

Step 3

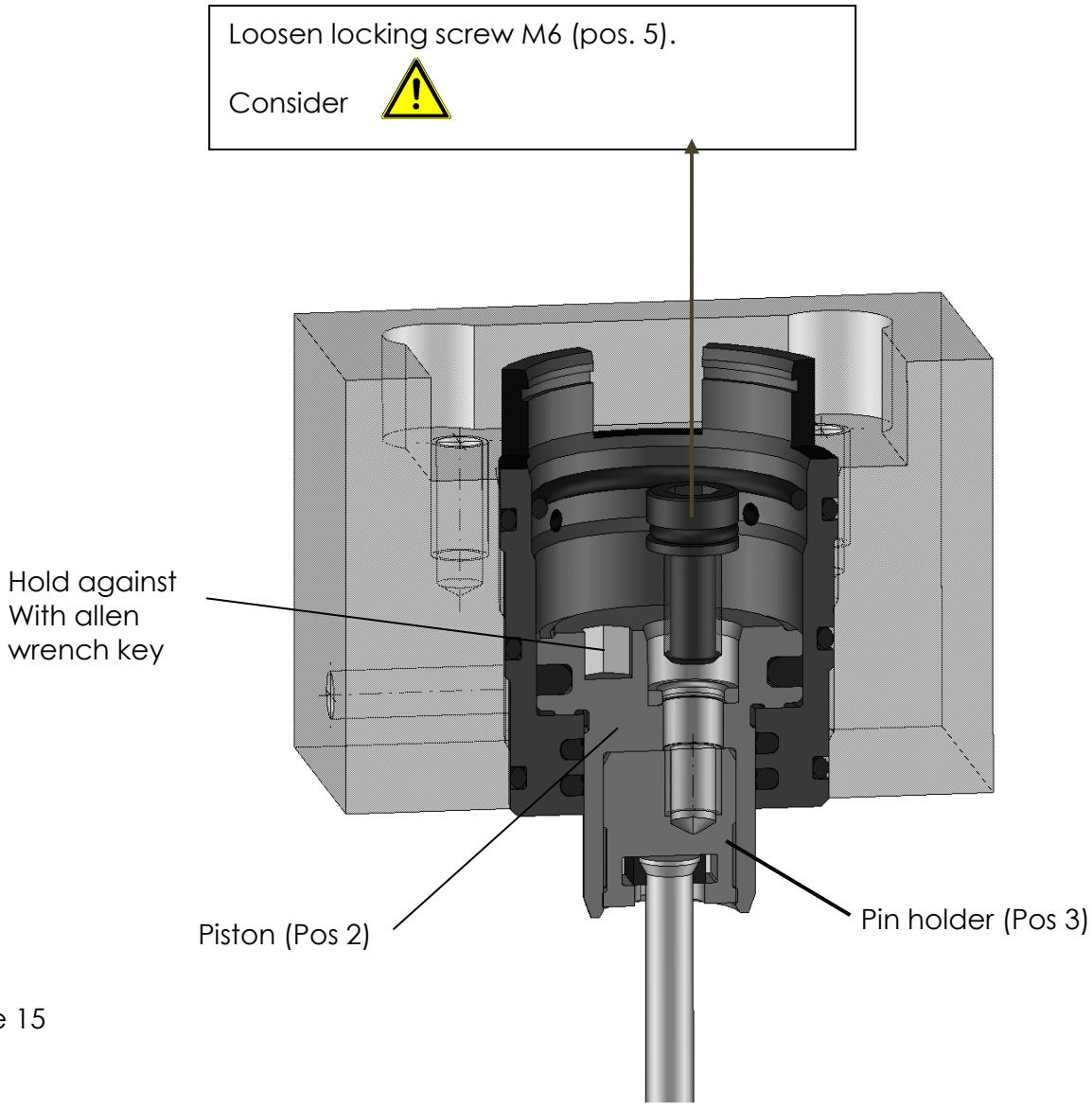
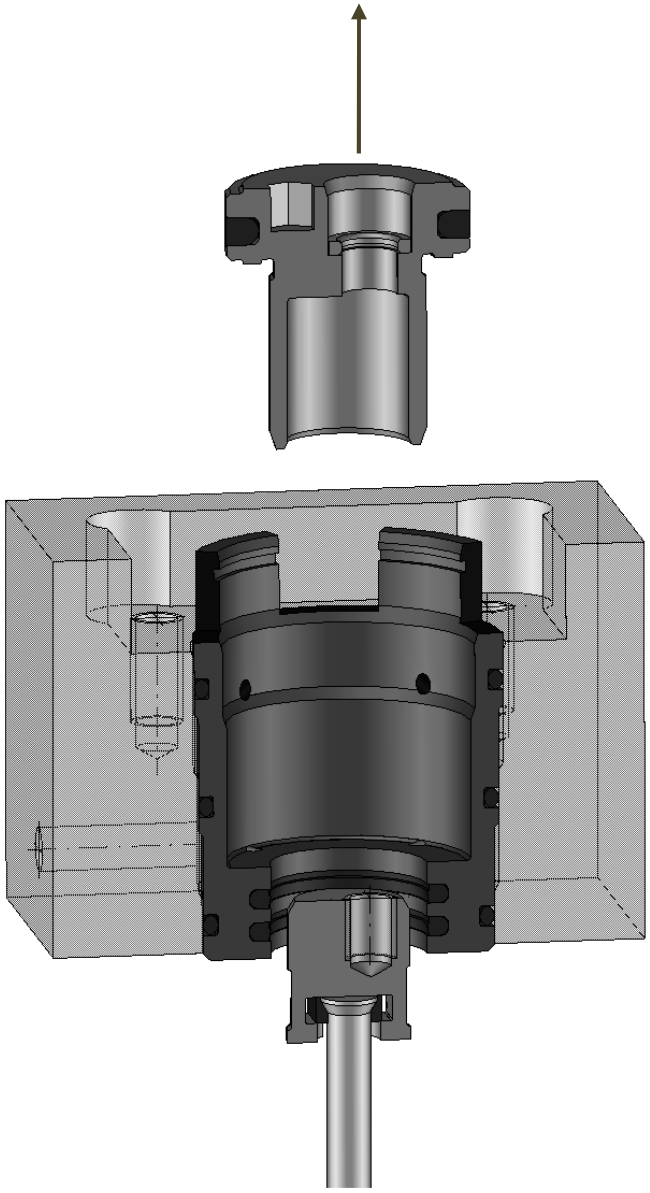


Figure 15

- Remove the screw (pos. 5) in the piston (pos. 2) and loosen the pin holder (pos. 3). (Piston (pos. 2) hold against with allen wrench key).

4.3 Uncoupling of the pin

Step 4



- Now, the Piston can be removed by a screw M4

- Now remove the clamping plate inclusive the case.

- Switch off the hotrunner heating elements to prevent a dropping out of the hot melt.

4.3 Uncoupling of the pin

Step 5

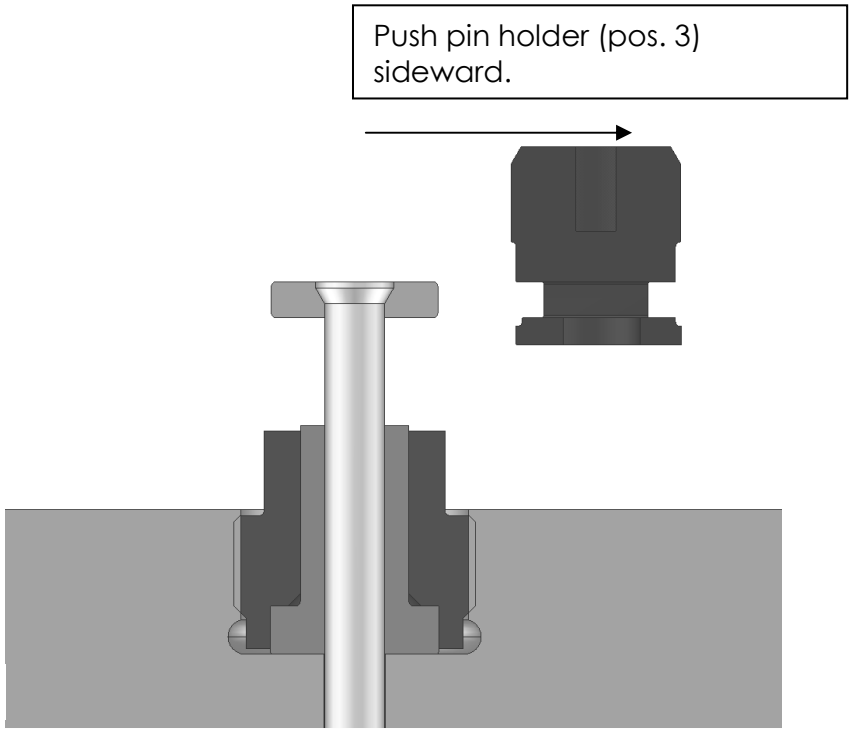


Figure 16

- Now push the pin holder (pos. 3) sideways off the pin.

5. Pin removal

To withdraw the pin, first must be uncoupling the Pin.
See **Point 4.3**

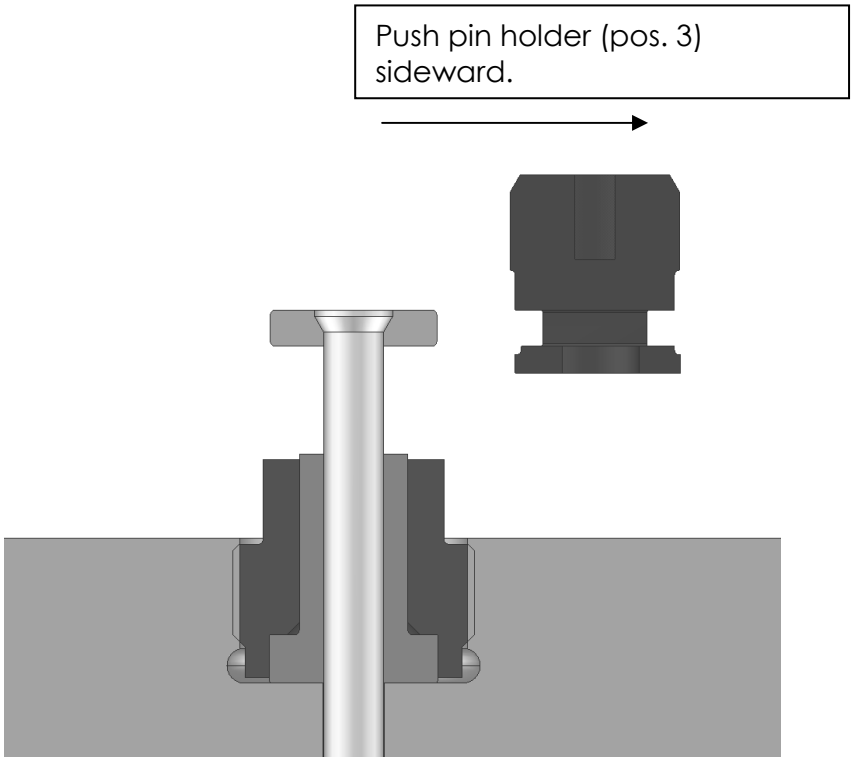


Figure 17

Now the pin can removal by an special tool.

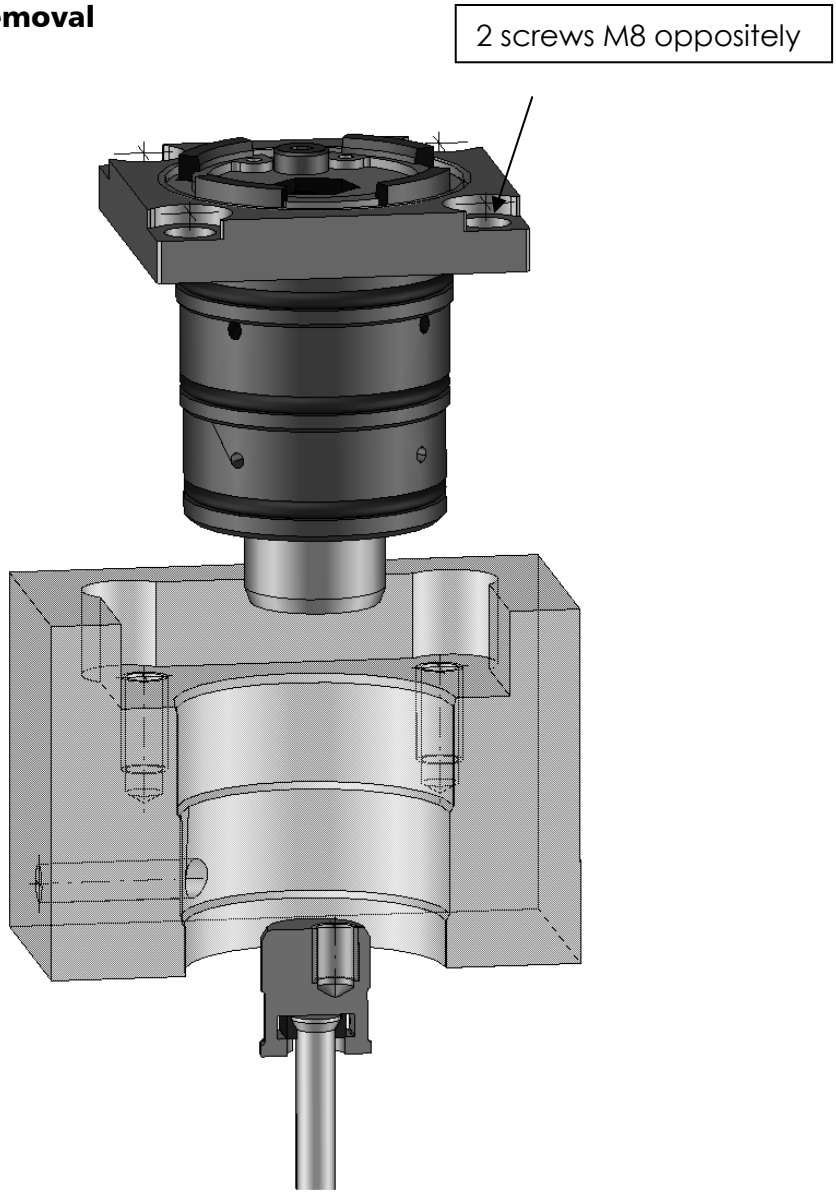
Attention !

Don`t use the pin holder (pos. 3) to removal the pin.

Attention !

If it is plastic in the manifold and in the nozzle, they must be heat up to melting temperature.

6. Case removal



- To removal the case, the holding plate with adjustment lid will be connected with the case by the locking ring.

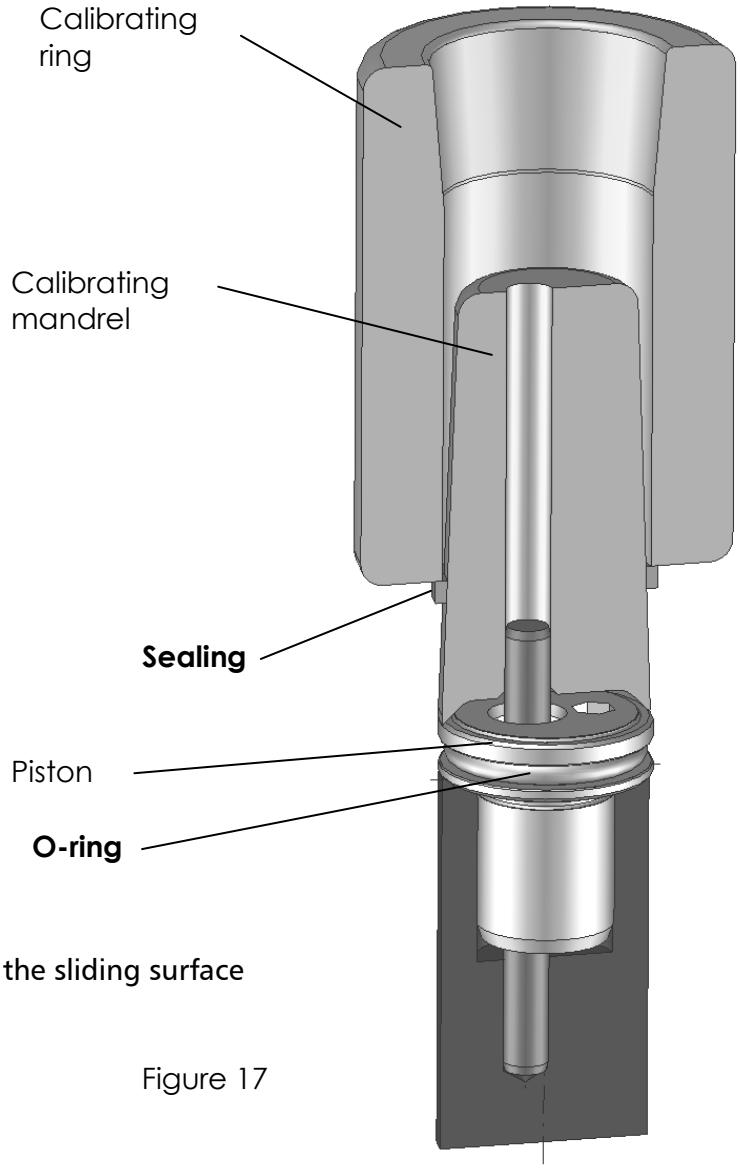
- Than the case can removed by 2 screws M8.

7. Sealing change

7.1. Piston sealing installation.

Step 1

- Insert the **O-ring** in the piston groove, then push the **sealing** over the calibrating mandrel by the use of a calibrating ring.
- Thus the **sealing** is stretched and pushed into the piston groove.



Lubricate the sliding surface

Figure 17

The calibrating tool can be ordered by PSG.

Step 2

Turn the calibrating ring and push it at the conical side over the profile ring sealing to unstretch the sealing. (First remove the calibrating mandrel)

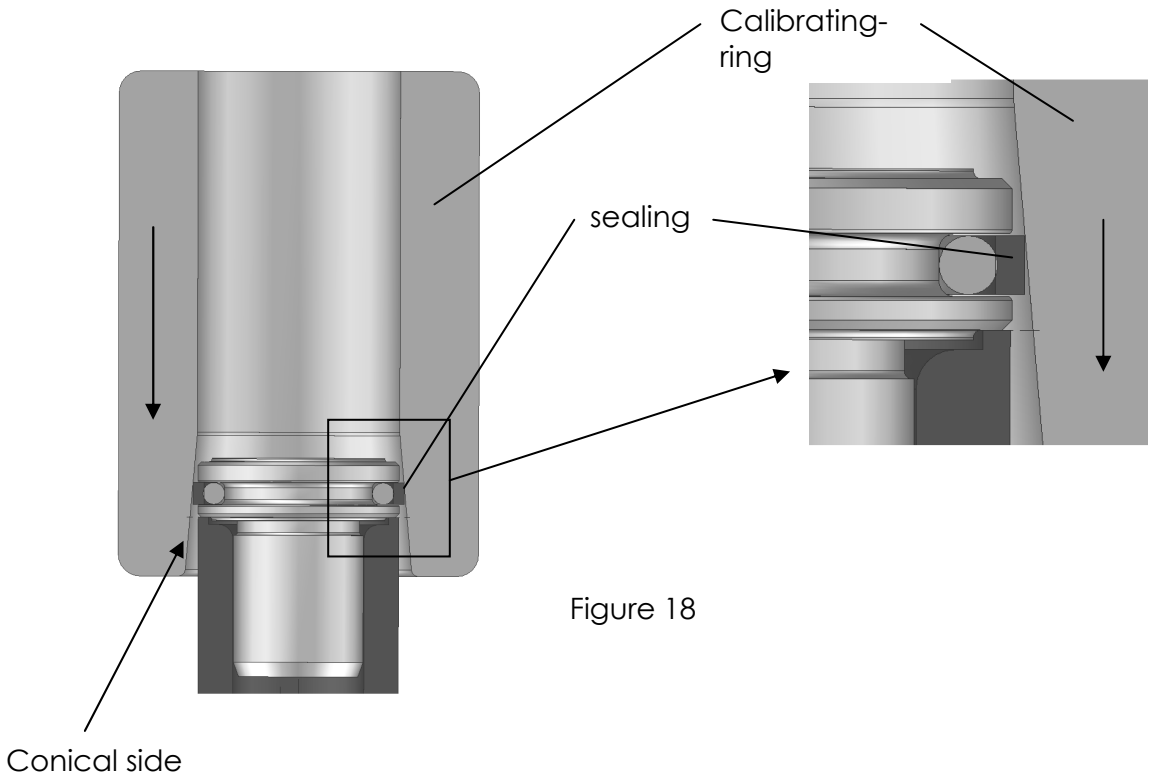
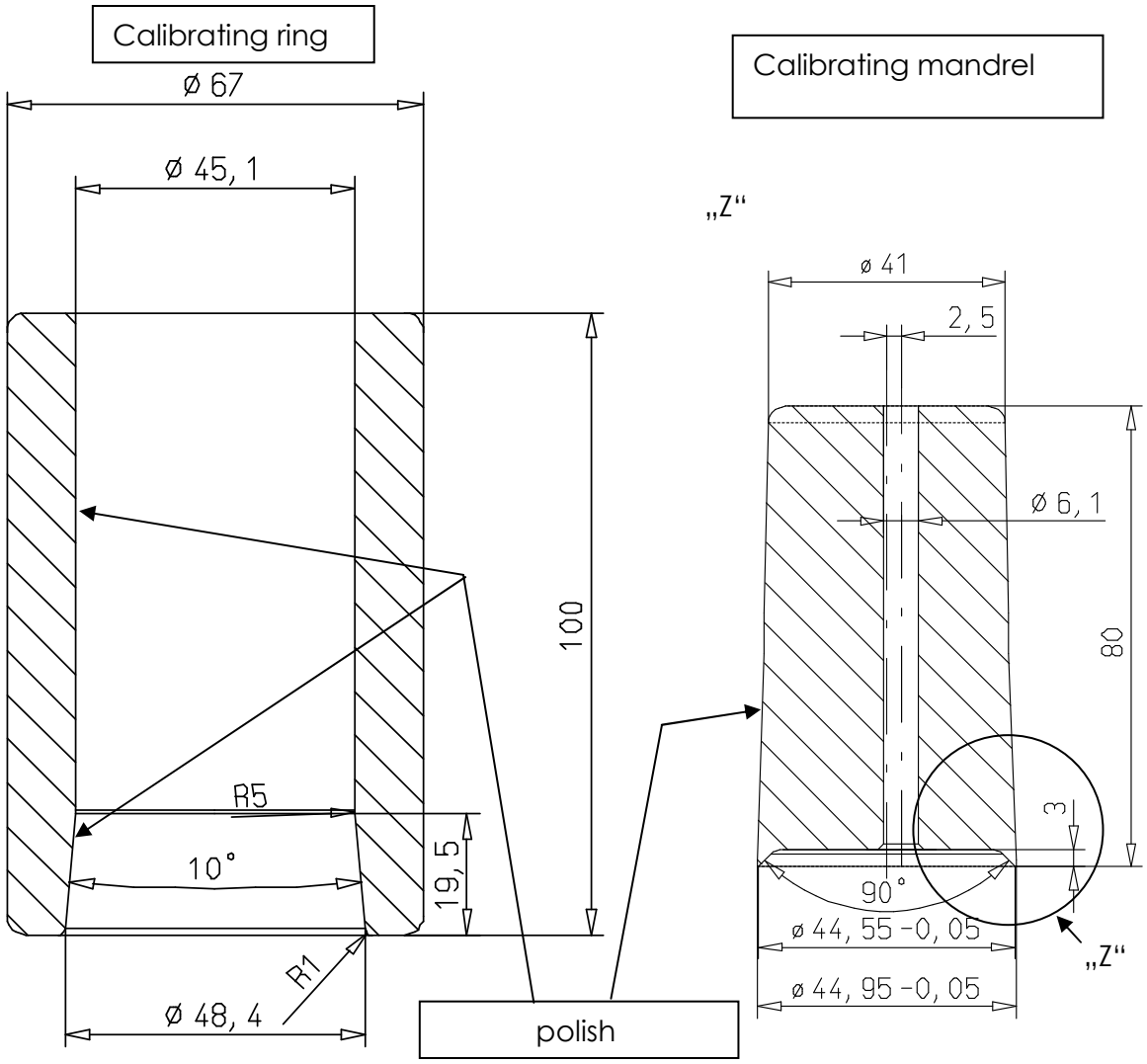
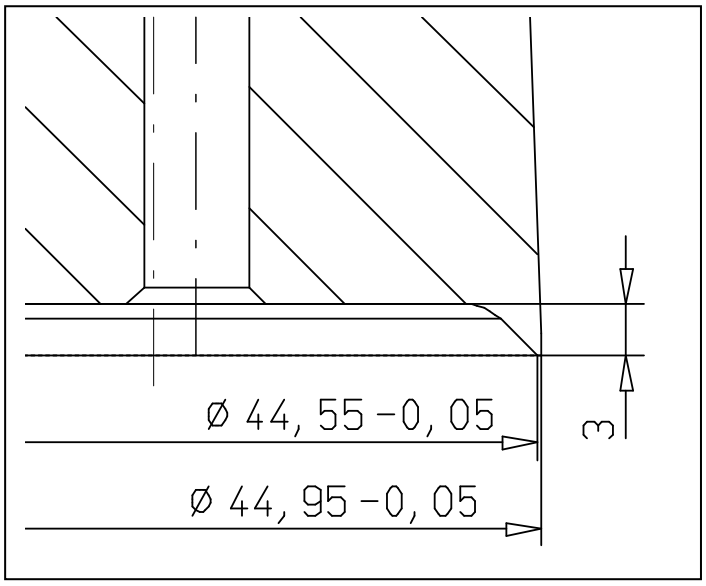


Figure 18

Graphed are the important parts of the calibrating tool



Detail „Z“

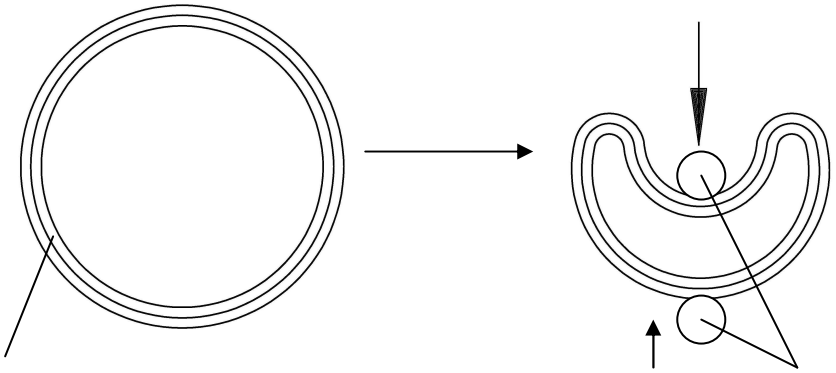


7.2 Piston rod sealing (Lip sealing) installation.

Lubricate the lip sealing (piston rod sealing). Squeeze carefully with your fingers to warm and soften the lip seal.

Shape like this

Figure 20

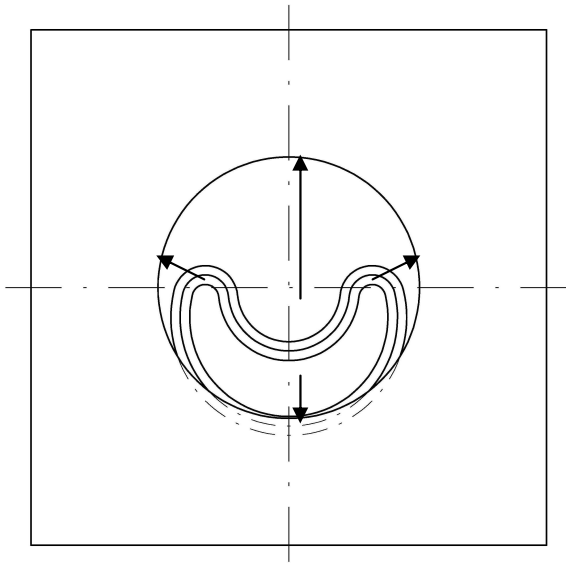


Lip sealing

Take between fingers or nipper.
Carefully: don't bend!

Then press the sealing carefully into the appropriated groove in the cylinder case.

Figure 21



(Cylinder case seen from above)

- Caution ! Consider, that the lip sealings point in the right direction.

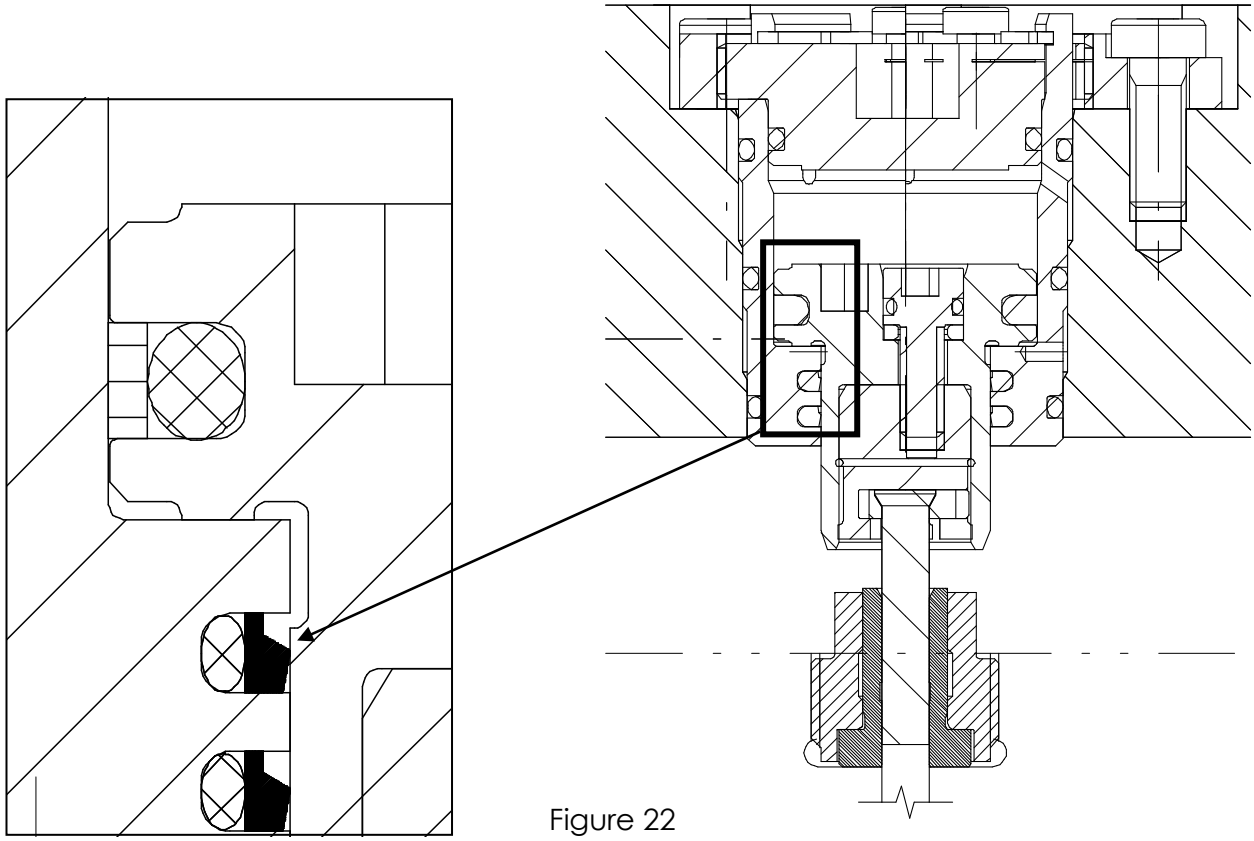


Figure 22

- Beat carefully against the sealing with a wood or a brass small tube.

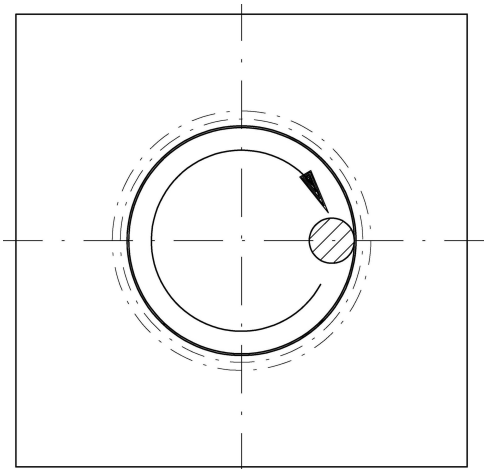


Figure 23